What is claimed is:

1. An integrated rotary-linear actuator system, comprising:

a plunger movable along and rotatable about a longitudinal axis extending through the plunger;

a coil system having coils arranged to, when energized, interact with the plunger to move the plunger in at least one of a rotational mode and in a linear mode;

an amplifier coupled to the coils and operative to provide electrical energy to energize the coils; and

a control system coupled with the amplifier, the control system having a network interface operative to receive control information, the control system being operative to control the amplifier to selectively energize the coils to effect desired movement of the plunger based on the control information received via the network interface.

2. The system of claim 1, further comprising an array of magnets arranged on one of an outside surface of the plunger and an inside surface of a motor support, which supports the plunger to permit movement thereof.

3. The system of claim 2, wherein the coil system further comprises a first set of coils arranged to apply an axial force on the array of magnets to drive the plunger in a linear mode and a second set of coils arranged to apply a tangential force on the array of magnets to drive the plunger in rotational mode.

4. The system of claim 2, wherein the motor support comprises a bearing support and a housing that define a well operative to receive the plunger, the plunger being supported by a bearing located between the plunger and the bearing support, such that the plunger is axially movable along the longitudinal axis between a retracted position and an extended position and rotatable about the longitudinal axis.

5. The system of claim 2, wherein the coil system further comprises first and second sets of coils, the first set of coils being operative to provide an electric field to

effect movement of the plunger in a linear mode, the second set of coils being operative to effect movement of the plunger in a rotational mode.

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6. The system of claim 5, wherein the amplifier further comprises first and second amplifiers, each being operative to provide electrical energy to a respective one of the first and second coils.

7. The system of claim 1 in combination with a network to which the network interface is coupled, the combination further comprising a computer operative to communicate the control information to the control system via the network interface using a network protocol.

8. The combination of claim 7, wherein the control information includes program data to program operating characteristics of at least part of the integrated rotary-linear actuator system.

9. The combination of claim 7, wherein the integrated rotary-linear actuator system further comprises at least one sensor operative to sense a condition of the integrated rotary-linear actuator system and provide a sensor signal indicative thereof, the control system being operative to communicate condition data based on the sensor signal to the computer via the network interface using the network protocol.

10. The combination of claim 9, wherein the control information includes program data operative to program operating characteristics of at least part of the integrated rotary-linear actuator system based on evaluation of the condition data from the integrated rotary-linear actuator system.

11. A rotary-linear actuator system, comprising:

a motor support having a well;

a plunger supported for movement in at least part of the well so as to enable axial movement of the plunger relative to the well along a longitudinal axis of the plunger and rotational movement of the plunger about the longitudinal axis;

an array of magnets associated with the plunger;

a first set of coils arranged to, when energized, apply an electric field that interacts with the array of magnets and provides an axial force to drive the plunger element in a linear mode;

a second set of coils arranged to, when energized, apply an electric field that interacts the array of magnets and provides a tangential force to drive the plunger element in a rotational mode; and

an integrated control system having a network interface operative to receive control information via an associated network, the control system being operative to selectively energize the first and second sets of coils to effect movement of the plunger in at least one of the linear and rotational modes.

12. The system of claim 1, further comprising a computer operative to communicate the control information to the control system via the associated network using a network protocol.

13. The system of claim 12, wherein the control information includes program data having executable instructions to program the control system to effect desired operating characteristics of the rotary-linear actuator system.

14. The system of claim 12, wherein the rotary-linear actuator system further comprises at least one sensor operative to sense a condition of the rotary-linear actuator system and provide a sensor signal indicative thereof, the control system being operative to communicate condition data based on the sensor signal to the computer via the associated network using the network protocol.

15. The system of claim 14, wherein the control information includes program data to program operating characteristics of at least part of the integrated rotary-linear actuator system based on evaluation of the condition data from the integrated rotary-linear actuator system.

16. An integrated rotary-linear actuator system, comprising:

means for supporting a plurality of motors including means for supporting a bearing, the means for supporting the plurality of motors and the means for supporting the bearing defining a well;

means for moving a stage and adapted to be received by the well, the means for moving the stage being axially movable along its longitudinal axis between retracted and extended conditions and rotatable about its longitudinal axis, the means for moving the stage being supported by a bearing located between the means for moving the stage and the means for supporting the bearing;

means for providing a magnetic field arranged on the means for moving the stage;

means for applying a substantially axial force on the means for providing the magnetic field and driving the means for moving the stage linearly;

means for applying a substantially tangential force on the means for providing the magnetic field for the means for moving the stage rotationally;

means for amplifying an electrical signal and providing the amplified signal to at least one of the means for applying; and

control means for controlling the means for amplifying, the control means including means for interfacing with an associated network and receiving control information to program the control means to control the means for amplifying to selectively activate the means for applying.

17. A method for controlling an integrated rotary-linear actuator system, the rotary-linear actuator system including a network interface to enable communication over an associated network, the method comprising:

receiving control information at the network interface of the integrated rotary-linear actuator system via the associated network;

programming operating parameters of the rotary-linear actuator system based on the received control information; and

controlling an amplifier to selectively energize coils of the rotary-linear actuator system according to the programmed operating parameters, such that a plunger, which is moveable linearly and rotationally about a longitudinal axis thereof, moves in at least one of a linear and rotational direction in response to the selective energization of the coils.

18. The method of claim 17, wherein the control information is communicated from a remote computer via the network interface using a network protocol.

19. The method of claim 20, wherein the control information includes program data, the operating parameters of the rotary-linear actuator system being programmed based on the program data.

20. The method of claim 18, further comprising:

sensing at least one condition of the integrated rotary-linear actuator system;

providing a sensor signal indicative of the sensed at least one condition; and

sending condition data from the integrated rotary-linear actuator system to the computer via the network interface using the network protocol, the condition data being based on the sensor signal.

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21. The method of claim 20, wherein the control information includes program data to program the operating parameters of at least part of the integrated rotary-linear actuator system based on evaluation of the condition data sent from the integrated rotary-linear actuator system.